Volunteer Lake Assessment Program Individual Lake Reports

PEMIGEWASSET LAKE, MEREDITH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,328	**Max. Depth (m):**	8.8	**Flushing Rate (yr^{-1}):**	2.8
Surface Area (Ac.):	241	**Mean Depth (m):**	2.4	**P Retention Coef:**	0.61
Shore Length (m):	6,100	**Volume (m^3):**	2,329,500	**Elevation (ft):**	559

TROPHIC CLASSIFICATION

Year	Trophic class
1980	MESOTROPHIC
1993	MESOTROPHIC

KNOWN EXOTIC SPECIES

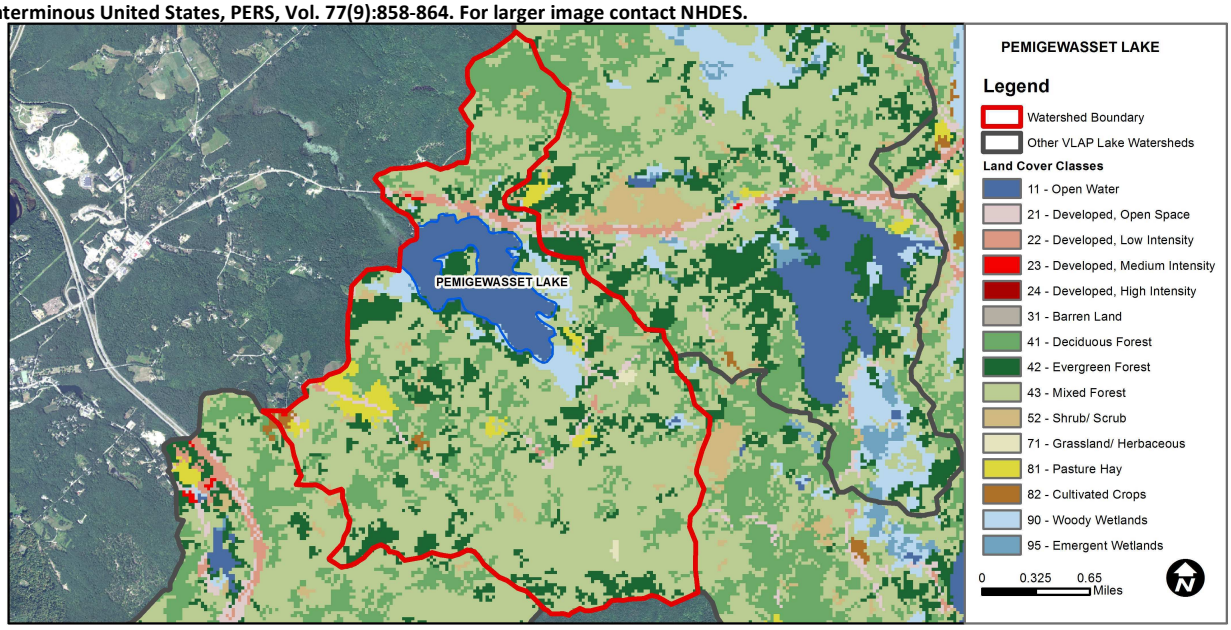
Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Cautionary	There are < 10 samples with 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.08	Barren Land	0	Grassland/Herbaceous	0.25
Developed-Open Space	1.36	Deciduous Forest	15.75	Pasture Hay	2.13
Developed-Low Intensity	0.81	Evergreen Forest	13.15	Cultivated Crops	0.28
Developed-Medium Intensity	0.08	Mixed Forest	53.88	Woody Wetlands	3.29
Developed-High Intensity	0	Shrub-Scrub	0.94	Emergent Wetlands	0.03

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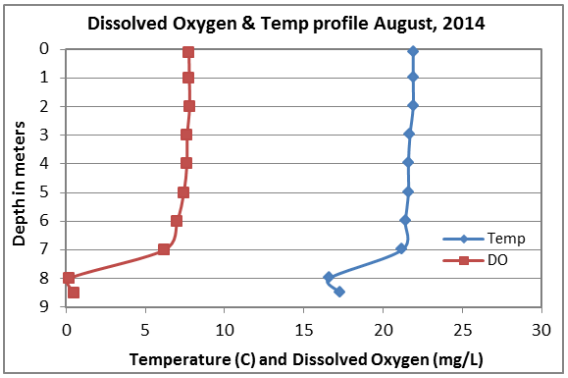
Pemigewasset Lake, Meredith

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were average and approximately equal to the state median. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and Outlet conductivity levels were average and approximately equal to the state median. Chloride levels were slightly greater than the state median however still within a low range. Historical trend analysis indicates highly variable epilimnetic (upper water layer) conductivity since monitoring began.
- **E. coli:** Boat Launch and Smoke Rise Cove E. coli levels were very low and much less than state standard of 88 cts/100 mL for public beaches and 406 cts/100 mL surface waters.
- **Total Phosphorus:** Deep spot and Outlet phosphorus levels were low and less than the state median. Historical trend analysis indicates stable Epilimnetic (upper water layer) phosphorus levels since monitoring began.
- **Transparency:** Transparency was good and was slightly lower (worse) in 2014 due to wind and wave conditions making Secchi disk viewing difficult. Historical trend analysis indicates relatively stable transparency since monitoring began.
- **Turbidity:** Deep spot and Outlet turbidities were low.
- **pH:** Deep spot pH levels were less than the desirable range 6.5—8.0 units and historical trend analysis indicates highly variable epilimnetic pH levels since monitoring began.
- **Recommended Actions:** Increase monitoring frequency to three times per summer, typically once per month in June, July and August. This will help to decrease variability in data better assessment of seasonal and historical water quality trends. Overall water quality looks good although pH levels are slightly less than desirable. Keep up the great work!



Station Name	Table 1. 2014 Average Water Quality Data for PEMIGEWASSET LAKE									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	4.4	4.30	10	44.5		8	4.00	4.00	0.87	6.46
Metalimnion				45.7		8			0.88	6.33
Hypolimnion				45.0		8			1.17	6.47
Boat Launch					10					
Outlet			9	45.5		9			0.86	6.51
Smoke Rise Cove					10					

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data highly variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.